

AMENDMENT TO THE CLAIMS

1-43. (cancelled)

44. (cancelled)

45. (cancelled)

46. (cancelled)

47-54 (cancelled)

55. (canceled)

56. (cancelled)

Claims 57-108 (canceled)

109. (canceled)

110. (canceled)

111 - 114 (canceled)

115. (New) An apparatus for testing a charging system of an automotive vehicle, comprising:
electrical connections configured to couple to a battery of the vehicle;
a user input configured to receive a battery rating from an operator;
a display configured to display information to the operator; and

a microprocessor configured to:

- prompt the operator to input rating information for the battery using the input;
- receive the rating information for the battery from the operator from the input;
- perform a battery test on the battery through the electrical connections to the battery;

- measure a dynamic parameter of the battery through the electrical connections to the battery;

- determine a condition of the battery based upon the measured dynamic parameter and the received rating, the battery test result indicative of a battery condition, the battery condition including a fully charged battery and a discharged battery;

- instruct the operator to start an engine of the vehicle through the display;

- detect starting of the engine of the automotive vehicle by the operator based upon a voltage measured through the electrical connections to the battery;

- measure a starting voltage through the electrical connections to the battery during starting of the engine of the automotive vehicle; and

- provide an output to the operator based upon the measured starting voltage and the battery test result, the microprocessor configured to provide a charge battery output to the operator through the display if the measured starting voltage is low relative to a threshold and the battery test result is indicative of a discharged battery, provide a cranking voltage low output to the operator through the display if the measured starting voltage is low relative to a threshold and the battery test result is indicative of a fully charged battery, provide a cranking voltage normal output to the operator through the display if the starting voltage is normal relative to a threshold and the battery test result is indicative of a fully charged battery.

116. (New) The apparatus of claim 115 wherein the user input is further configured to receive a rating standard selection from the user.

117. (New) The apparatus of claim 116 wherein the rating standard selection comprises an SAE standard.

118. (New) The apparatus of claim 116 wherein the rating standard selection comprises a DIN standard.

119. (New) The apparatus of claim 116 wherein the rating standard selection comprises an IEC standard.

120. (New) The apparatus of claim 116 wherein the rating standard selection comprises an EN standard.

121. (New) The apparatus of claim 116 wherein the rating standard selection comprises a JIS standard.

122. (New) The apparatus of claim 115 wherein the battery test is based upon conductance.

123. (New) The apparatus of claim 115 wherein the battery test is based upon resistance.

124. (New) The apparatus of claim 115 wherein the battery test is based upon impedance.

125. (New) The apparatus of claim 115 wherein the battery test is based upon admittance.

126. (New) The apparatus of claim 115 wherein the microprocessor is configured to provide an output selected from the group of outputs consisting of cranking voltage indicating “good

battery”, “good but recharge battery”, “charge and retest battery”, “replace battery”, and “bad cell-replace battery”.

127. (New) The apparatus of claim 115 wherein the microprocessor further measures a voltage when the engine of the vehicle is revved and no vehicle loads are applied.

128. (New) The apparatus of claim 127 wherein the microprocessor further measures a voltage when the engine is idle and a vehicle load is applied.

129. (New) The apparatus of claim 128 wherein the microprocessor further measures a voltage when the engine is revved and a vehicle load is applied.

130. (New) The apparatus of claim 115 wherein the microprocessor further measures AC voltage ripple.

131. (New) The apparatus of claim 115 wherein the user input is configured to receive a temperature.

132. (New) The apparatus of claim 115 wherein the battery test is a function of a temperature.

133. (New) The apparatus of claim 115 wherein the microprocessor is configured to determine if surface charge exists on the battery.

134. (New) The apparatus of claim 133 wherein the microprocessor prompts an operator to turn on headlights of the vehicle based upon a surface charge determination.

135. (New) The apparatus of claim 115 wherein the output further comprises an output selected from the group of outputs consisting of measured capacity, voltage, voltage during cranking, idle voltage, and load voltage.

136. (New) The apparatus of claim 115 wherein the microprocessor records AC and DC voltages in a memory.

137. (New) The apparatus of claim 115 wherein the microprocessor records a voltage across the battery in a memory.

138. (New) The apparatus of claim 115 including a battery voltage scaling circuit.

139. (New) The apparatus of claim 115 including DC voltage sensor adapted to measure a DC voltage of the battery and an AC voltage ripple detector adapted to measure an AC ripple voltage across the battery.

140. (New) The apparatus of claim 115 wherein the microprocessor measures a steady state battery voltage with the engine off, a battery voltage with the engine revved, a battery voltage with the engine idling and a load applied to the battery, and a battery voltage with this engine revved and a load applied to the battery.

141. (New) The apparatus of claim 115 wherein the microprocessor is adapted to receive an input indicating that the vehicle contains a diesel engine and wherein the microprocessor waits for glow plugs of the diesel engine to warm up and charging to start prior to performing a test.

142. (New) The apparatus of claim 115 wherein the tester is portable.